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ABSTRACT

This study examined the sociometric choices and classroom behavior of third grade children in integrated schools. Children were asked how much they liked to work and to play with their classmates. Behavioral observations, using a sequential time-sampling technique, were also made for a portion of the same sample of children. Finally, achievement scores in reading and mathematics from a school-administered test were obtained for the sample. A number of issues were examined: (1) the relative influence of race and sex on children's sociometric choices; (2) the difference in race and sex effects on the play and work scales; (3) the importance of achievement level to sociometric status; and, (4) the extent to which social interaction patterns in the classroom parallel the sociometric findings. One third grade classroom was randomly selected from each of 11 elementary schools in a midwest school district. The sociometric test was given in April 1973 to 244 children The final sample size was 242, including 101 white males, 90 white females, 21 black males and 30 black females. Sex was found to be a much stronger determinant of peer preference than race. Choice patterns were different for play and work with blacks being more popular on the play variable. (Author/JM)

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Sociometric Ratings and Social Interaction Among Third Grade Children in an Integrated School District

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Social interaction was assessed among third grade children who were in integrated classrooms throughout their public school experience. Two methods were used: a roster-and-rating scale sociometric technique and classroom observation of behavior. The relative influence of race and sex on children's choices for play and work companions was examined. Sex was a much stronger determinant of peer preference than race. Choice patterns were different for play and work with blacks being more popular on the play variable. The observation data, too, present a rather positive picture of black-white interaction in the classroom.

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While there has been much interest recently in the influence of integration on academic achievement (e.g., Berkowitz, 1967; Coleman, 1966; Katz, 1968; McPartland, 1968; St. John, 1971) less attention has been paid to sociometric status and social interaction in integrated settings. The purpose of the present study was to assess the nature of social interaction among third-grade children in integrated classrooms. The study was designed in response to a school district's interest in the social effects of busing in their schools. Third grade was chosen because these children were the first cohort group to have been in integrated classrooms throughout their public school experience. A combination of a roster-and-rating scale sociometric technique and classroom observation of behavior was used.

Sociometric Studies

Two different types of sociometric techniques have been used to study peer preferences: the peer nomination method used in the majority of sociometric studies, and the roster-and-rating scale questionnaire which is used in the present study. In the nomination method the child names a specified number of friends, playmates, seating companions, etc. (Moreno, 1934). In the roster-and-rating scale method the child gives a rating on a numerical scale to all members of the class (Roistacher, 1974). Roster-and-rating scales have several advantages over peer nomination sociometric tests: (1) the class roster decreases the likelihood of a person not being chosen by a child because he was momentarily forgotten; (2) the scale allows each child to indicate a rating for each classmate rather than just a few; and (3) since each child is rated by all of his or her classmates the technique provides an indication of the child's acceptance by all of the group members.

Nearly all sociometric studies of groups containing black and white children have used the peer nomination method. The first studies in this area were done by Moreno and his colleagues (Criswell, 1937, 1939; Moreno, 1934). They found that preference for members of the child's own sex was much stronger than own-race preference in the early elementary school years. Separation into racial groups appeared in about third or fourth grade and continued to increase through the eighth grade. Radke, Sutherland and Rosenberg (1950) and Georgeoff and Paterson (1965) also found evidence of an increase in own-race preference with age. Other sociometric studies dealing with cross-sex choices have reported that young children rarely select members of the other sex (Bonney, 1954; Dahlke, 1953). For example, Gronlund (1953) found that among sixth-grade children only 8% of the boys' choices went to girls and 7% of the girls' choices went to boys.

Several researchers have employed more than one sociometric choice criterion in their studies. In a study of kindergarten through fourth grade children by Bartel, Bartel and Grill (1973), the mean number of black children chosen by both blacks and whites for academic situations decreased significantly from first to fourth grade. In regard to social situations both black and white children showed increased preference for their own race from kindergarten through fourth grade. These data suggest that children may choose different peers for work and play situations.

Observation Studies

There has been a minimum amount of behavioral observation reported in integrated elementary school classrooms. In a study conducted in one classroom almost no interracial interaction among first-grade children was observed (Hauserman, Walen and Behling, 1973). In a more extensive study, Shaw (1973) found that cross-race interactions were significantly below chance expectancy in grades one through six. In addition, there was a significant decrease across grade levels in the percentage of black-white interactions. Along with observational data Shaw presented sociometric data which also indicate racial separation among the children.

The Present Study

The present study examined the sociometric choices and classroom behavior of third grade children in integrated schools. A roster-and-rating scale sociometric technique with two choice criteria was used. Children were asked how much they liked to work and to play with their classmates. Behavioral observations, using a sequential time-sampling technique, were also made for a portion of the same sample of children. Finally, achievement scores in reading and mathematics from a school-administered test were obtained for the sample.

A number of issues were examined: (a) the relative influence of race and sex on children's sociometric choices; (b) the difference in race and sex effects on the play and work scales; (c) the importance of achievement level to sociometric status; and (d) the extent to which social interaction patterns in the classroom parallel the sociometric findings.

METHOD

Subjects. One third grade classroom was randomly selected from each of eleven elementary schools in a midwest school district.[3] The sociometric test was given in April, 1973 to 244 children. Because the study focuses on black and white children the data from one Oriental and one Indian child were excluded. The resulting N was 242, 21% of whom were black. There were 101 white males, 90 white females, 21 black males and 30 black females.

For the observation portion of the study the black children in each classroom were observed, along with an equal number of randomly selected white children matched for sex. No more than ten students were observed in any one classroom. In three classrooms there were six black children and in two classrooms there were seven black children. In these cases five black children and five white children were randomly selected. The resulting N was 86, including 18 white males, 18 black males, 25 white females and 25 black females.

Sociometric Test. Two five-point rating scales were used, each accompanied by an alphabetical roster including the names of all class members. The sociometric question, "How much do you like to play with this person at school?" was typed on the first scale along with five faces ranging from frowning to smiling to depict the meaning of the numbers on the scale. The question on the second scale was, "How much do you like to work with this person at school?" The children were given the following instructions: "We are interested in some information

about your class. We would like to find out how well you know each other, and we would like to know who you like to work with and who you like to play with. You will be able to tell us who your friends are in this classroom. We won't be doing this out loud in a group, but you'll let us know your choices by marking them down on some papers I will give you. You can be honest because I won't show anyone else in the class your answers. I will be the only one to see them." After this introduction the play scale was distributed. The use and meaning of the five-point scale was explained using examples of food (e.g., How much do you like ice cream, spinach, etc.?). When the children appeared to understand the meaning of all the points on the scale, the class rosters were distributed. After the children wrote their names on the top of the first page and crossed out their own name on the list, the meaning of the play situation was discussed. Examples included recess, free time before class, and time spent in the playground. The experimenter then did two examples, using fictitious names, together with the class. The examples were typed on the top of the first page. The children were then instructed to mark each classmate's name in a similar manner, circling only one number for each name. When everyone was finished, the scales and rosters were collected and new scales and rosters were distributed for the work ratings. The distinction between work and play was discussed. Examples of work situations included doing math, science, reading or going to the library during school hours.

Classroom Observation. Shortly after the administration of the sociometric test, an observer visited each of the eleven classrooms on two different occasions. A sequential time-sampling method was used. The first child on the list was observed for six seconds. During the next four seconds the child's behavior was coded. For the next six seconds the next child on the list was observed, etc.. Twenty-five observations were recorded per child during each visit. If two behaviors occurred in one six-second interval, the predominant behavior was scored. The observer recorded whether the child was alone, interaction positively, or interacting negatively. The observer also recorded the race and sex of any child or children with whom the subject was interacting. A positive interaction was one in which a child was being overtly positive (e.g., sharing, smiling) or engaging in what might be called maintenance activity (e.g., quietly talking, working on a task with another child). A negative interaction was one in which a child expressed aggression or hostility toward another child (e.g., physical or verbal abuse, taking another child's materials). Inter-rater reliability, calculated as Number of Agreements - Number of Disagreements/Total Observations, was .94.

RESULTS

Sociometric Ratings. Analyses of the sociometric ratings are reported separately for the two dependent variables, play and work. The overall correlation between the play rating received by each child and the work rating received was .75. Play and work ratings were each analyzed using a 2X2X2X2 (Race of Giver X Sex of Giver X Race of Receiver X Sex of Receiver) analysis of variance. Race bias in peer ratings would be reflected in a significant race of giver by race of receiver interaction. Sex bias would be reflected in a significant sex of giver by sex of receiver interaction. Only nine of the eleven classes are included in these analyses. One class was eliminated because it had no black female members and another was eliminated because it contained no black males. The resulting N for these analyses was 198 including 80 white males, 75 white females, 17 black males and 26 black females.

Play. The average play ratings given by the children in each race and sex group are presented in Table 1. The results of the analysis of variance for the play ratings are presented in Table 2. Own-sex ratings were higher than cross-sex rating for both males and females. The interaction of sex of giver by sex of receiver was highly significant. Own-race ratings were generally higher than cross-race ratings for blacks and whites. The race of giver by race of receiver interaction was also statistically significant but was not as large as the interaction for the sex factors. Other significant results were that black children gave higher scores to everyone than white children (blacks=3.34, whites=2.90) and males received higher scores than females (males=3.28, females=2.95).

Omega-squared analyses provide a useful perspective on the magnitude of the race and sex effects. The sex of the child accounted for 49% of the variance on the play ratings while race accounted for only 1% of the variance.

Table 1

Average Play Ratings Given By Each Race and Sex Group

	Giver			
Receiver	White Male	Black Male	White Female	Black Female
White Male	3.83	4.19	2.20	2.52
Black Male	3.97	4.50	2.04	2.99
White Female	1.99	2.31	3.77	3.69
Black Female	1.79	2.51	3.59	3.97

Table 2

Summary of Analysis of Variance for the Play Ratings (df=1,194)

Source	MS	F	p
Race of Giver (B)	24.86	16.87	$<.001$
Sex of Giver (C)	0.20	0.14	NS
BXC	0.24	0.17	NS
Race of Receiver (D)	1.60	2.72	NS
BXD	5.69	9.67	$<.01$
Sex of Receiver (E)	13.88	11.69	$<.001$
CXE	350.82	295.28	$<.001$

Work. The average work ratings given by the children in each race and sex group are presented in Table 3. In general, the work ratings were lower than the ratings for play but they followed a similar pattern. The results of the analysis of variance for the work ratings are presented in Table 4. Own-sex ratings were higher than cross-sex ratings for males and females. Own-race ratings were higher than cross-race ratings but the differences were not as large as those for the sex factors. Black children again gave higher scores to others than white children did (blacks=3.20, whites=2.63) and males received higher scores than females (males=3.03, females=2.80).

Omega-squared analyses of the work ratings reveal the stronger influence of sex over race on sociometric ratings. Sex accounted for 39% of the variance. In contrast, race accounted for only 1% of the variance.

Table 3

Average Work Ratings Given By Each Race and Sex Group

	Giver			
Receiver	White Male	Black Male	White Female	Black Female
White Male	3.58	3.99	1.99	2.54
Black Male	3.30	4.32	1.82	2.74
White Female	1.95	2.37	3.48	3.47
Black Female	1.67	2.38	3.22	3.81

Table 4

Summay of Analysis of Variance for the Work Ratings (df=1,194)

Source	MS	F	p
Race of Giver (B)	43.32	23.11	<.001
Sex of Giver (C)	0.53	0.28	NS
BXC	0.52	0.28	NS
Race of Receiver (D)	0.02	0.04	NS
BXD	7.16	13.51	<.001
Sex of Receiver (E)	7.40	5.53	<.01
CXE	278.05	207.79	<.001

Relationship to Achievement. Scores on the Metropolitan Achievement Test given by the school district six months earlier were available in reading and mathematics for 214 of the 242 children. The average achievement scores and the number of children in each race-sex group are reported in Table 5.

To examine the relationship between achievement and sociometric status, a number of correlational analyses were performed. For these analyses the ratings each child received from whites and blacks of the same sex were used. Children's achievement test scores in reading and mathematics were correlated with the ratings they received from each group. The correlations for achievement test scores with the play sociometric ratings received from same-sex peers are presented in Table 6. The correlations of achievement with same-sex work ratings are presented in Table 7.

Table 5

Average Scores on the Metropolitan Achievement Test

Group	N	Math	Reading
White Male	92	66.67	62.29
Black Male	17	46.18	34.18
White Female	79	68.29	65.39
Black Female	26	55.15	53.42

Table 6

Correlations of Achievement Test Scores With Same-Sex Play Ratings

Receiver-Giver	Reading	Mathematics
White Males-White Males	.04	.01
Black Males-White Males	-.14	.15
Black Males-Black Males	.14	.18
White Males-Black Males	-.05	.07
White Females-White Females	.32*	.22**
Black Females-White Females	.04	.34
Black Females-Black Females	-.12	-.02
White Females-Black Females	.01	-.04

*$p < .01$
**$p < .05$

Table 7

Correlations of Achievement Test Scores
With Same-Sex Work Ratings

Receiver-Giver	Reading	Mathematics
White Males-White Males	.29*	.28*
Black Males-White Males	.20	.13
Black Males-Black Males	-.04	.07
White Males-Black Males	.18	.19
White Females-White Females	.34*	.17
Black Females-White Females	.25	.43**
Black Females-Black Females	-.07	-.01
White Females-Black Females	-.13	-.24**

*$p < .01$
**$p < .05$

These correlations do not show a strong relationship between sociometric status and achievement, however, some interesting trends emerge. First, the relationship between achievement and sociometric status is stronger when white children are rating other children. For black children as raters, there is only one significant correlation and that is negative. Second, there are more significant correlations between achievement test scores and work ratings than between achievement test scores and play ratings. This provides further evidence that children rated their peers differently on the play and work scales.

Classroom Observations. Since a time-sampling technique was used, behavior is reported as the percentage of six-second intervals in which a particular behavior was coded. White children were alone in 52.3% of the intervals in which they were observed. They interacted with peers in 42.6% of the intervals, and interacted with the teacher in 5.1% of the intervals. The percentages are similar for black children. Black children were alone in 52.7% of the intervals in which they were observed. Their level of interaction with peers was 40.3%, and their level of interaction with the teacher was 7.0%.

Of the interactions that occurred among children, 32.3% were between white children, 19.7% were between black children and 48.0% were between white and black children. Thus, the amount of same-race and cross-race interaction was about equal.

An analysis of the quality of interactions reveals that most of them were positive. When white children were interacting with other white children, 96.9% of the interactions were of a positive nature. When black children were interacting with white children, 97.0% of the interactions were positive. Of the interactions which involved only black children a somewhat lower percentage, 91.8%, were positive.

The data can also be examined in terms of sex differences and same-sex and cross-sex interactions. Boys were alone in 52.0% of the intervals in which they were observed. They interacted with peers in 41.8% of the intervals, and interacted with the teacher in 6.3% of the intervals. In comparison, girls were alone in 58.6% of the intervals in which they were observed. Their level of interaction with peers was 34.9%, and their level of interaction with the teacher was 6.5%.

Of the interactions that occurred among children, 33.9% were between boys, 38.9% were between girls, and 27.2% were between boys and girls. The percentage of cross-sex interactions then, was small compared to the percentage of same-sex interactions.

The most positive interaction occurred when girls were interacting with other girls (98.0%). The amount of positive interaction when boys were interacting with other boys (94.8%) was about the same as the amount of positive boy-girl interaction (94.4%).

To summarize, the observational data indicated that cross-race interactions in the classroom were frequent and predominantly positive, and that cross-sex interactions were much less frequent but were predominantly positive.

DISCUSSION

The results of this study present a rather positive picture of interracial association in the integrated third-grade classrooms studied. The influence of race on sociometric choice, though significant, was small. The Omega-squared analyses show that race is a far less important influence than sex on sociometric ratings. The observational portion of this study supports the sociometric findings. There were more cross-race than cross-sex interactions and most of the cross-race, as well as the cross-sex interactions, were positive.

The sociometric data indicate that children gave different ratings for play and work situations. Also, there were more significant correlations of achievement scores with work ratings than with play ratings. Together these findings support the value of using both play and work sociometric questions. The finding that children gave different play and work sociometric ratings is encouraging. It suggests that children perceived each other in terms of skills rather than simply as blacks or whites.

Correlational data indicate that scholastic achievement was not strongly related to sociometric ratings. It is interesting to note, however, that the correlations were higher when white children were rating other children than when black children were rating other children. A recent study (Carter, DeTine, Spero and Benson, 1975) employing a type of roster-and-rating scale sociometric instrument found a strong relationship between academic achievement as measured by grade point average and sociometric status. In that study children rated each classmate by comparing him or her to all other associates. Perhaps this comparative approach accentuates the relationship between academic achievement and sociometric status.

An interesting question is why the race effect in the present study, though statistically significant, is smaller than that reported in previous research (e.g., Bartel et al., 1973; Criswell, 1939). One explanation is that children in the present study are showing positive effects of being in racially integrated classrooms throughout their school experience. Another interpretation involves measurement considerations. In previous research children named best friends or classmates they most liked to play with. When, as in the present study, children are given the opportunity to rate each of their classmates, no forced choice is required and less race bias may result. Future research might investigate the pattern of cross-race sentiment exhibited on nomination vs. roster-and-rating scale sociometric tests.

Previous literature using cross-sectional designs suggests that race becomes a more important consideration in children's sociometric choices in the later grades. A longitudinal study of the present sample is being planned. There is also a need for research evaluating programs designed to increase opportunities for positive cross-race interactions. Hauserman et al. (1973) have reported some success using reinforcement techniques. Georgeoff, Jones, Bahlke and Howard (1970) suggest incorporating the study of black history into the curriculum as a means of encouraging the children to see each other as equals. And DeVries and Edwards (1974) found that the use of student learning teams including blacks, whites, males and females had a positive effect on cross-race and cross-sex interaction. The findings of the present study indicate that in attending to race bias we may be giving insufficient attention to sex bias. Programs designed to break down the barriers to cross-race and cross-sex association could be a powerful approach to increasing positive social interaction in the classroom.

Footnotes

[1]The authors wish to thank Richard Roistacher for his help in designing the sociometric instrument and Jeff Seibert for his help in collecting the observational data. Copies of this paper are available from Louise Singleton, University of Illinois, Department of Educational Psychology, 210 Education, Urbana, IL 61801

[2]This is a fictional school district. The name of the school district has been omitted for purposes of anonymity.

[3]The twelfth school in the district contained multi-age classrooms and therefore was not included in the study.

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